

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re application of: Wang et al.

Attorney Docket No.:
NOVLP085/NVLS-2875

Application No.: 10/785,235

Examiner: Fernando L. Toledo

Filed: February 23, 2004

Group: 2823

Title: PLASMA DETEMPLATING AND
SILANOL CAPPING OF POROUS
DIELECTRIC FILMS

CERTIFICATE OF MAILING

I hereby certify that this correspondence is being deposited with the U.S. Postal Service with sufficient postage as first-class mail on December 22, 2006 in an envelope addressed to the Commissioner for Patents, P.O. Box 1450 Alexandria, VA 22313-1450.

Signed: _____

Tara Hayden

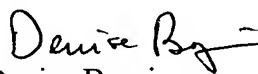
Communication

Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Dear Sir:

The above-indicated application has been indicated allowed and this communication accompanies the payment of issue fee. Enclosed is an Office Action mailed in U.S. Patent Application No. 10/404,693 on September 8, 2006. The '693 application and all previous Office Actions in the '693 application have been cited and considered in the present case. Because the enclosed Office Action was received shortly before the Notice of Allowance in the present case, Applicants did not have an opportunity to cite the Office Action in the present case. Certain of the presently allowed claims are similar to claims pending in the '693 case.

Respectfully submitted,
BEYER WEAVER & THOMAS, LLP

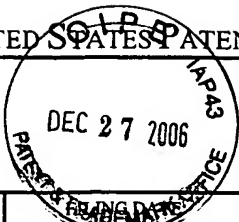

Denise Bergin
Reg. No. 50,581

Tel.: 510-663-1100
P.O. Box 70250
Oakland, CA 94612-0250



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APPLICATION NO.	10/404,693	FILING DATE	03/31/2003	FIRST NAMED INVENTOR	Raashina Humayun	ATTORNEY DOCKET NO.	NOVLP064/NVLS-794	CONFIRMATION NO.	8470
22434		7590		09/08/2006		EXAMINER			
BEYER WEAVER & THOMAS, LLP						TALBOT, BRIAN K			
P.O. BOX 70250						ART UNIT			
OAKLAND, CA 94612-0250						PAPER NUMBER			

1762

DATE MAILED: 09/08/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

BEYER WEAVER & THOMAS, LLP
ATTY: <u>JKW</u> ASSOC.: <u>DSB</u>
ACTION: <u>Early Resp/Final</u>
<u>Reg/Notice of Appeal</u>
DUE DATES: <u>11/08/06,</u>
<u>12/08/06, 03/08/07</u>
DOCKETED: <u>9/12</u> BY: <u>CW/KRA/12</u>
DOCKET NO.: <u>NOVLP064</u>



Office Action Summary

Application No.

10/404,693

Applicant(s)

HUMAYUN ET AL.

Examiner

Brian K. Talbot

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 03 July 2006.
- 2a) ☒ This action is FINAL. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-18, 20-36 and 38-41 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-18, 20-36 and 38-41 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date 7/3/06.
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____.
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: _____.

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1. The amendment filed 7/3/06 has been considered and entered. Claims 19 and 37 have been canceled. Claims 40-41 have been added. Claims 1-18,20-36 and 38-41 remain in the application.
2. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.
3. In light of the arguments filed 7/3/06, the rejection concerning reference Schulberg et al. (2004/0096586) has been withdrawn.
4. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

Claim Rejections - 35 USC § 103

5. Claims 1-3,5,7,10-18 and 41 are rejected under 35 U.S.C. 103(a) as being unpatentable over Cho et al., "Plasma Treatments of Molecularly Templated Nanoporous Silica Films" in combination with Dickinson et al. (6,846,380).

Cho et al., "Plasma Treatments of Molecularly Templated Nanoporous Silica Films" teaches oxygen plasma has been used to successively remove organic template from a molecularly templated nanoporous silica films. Then the hydrophilic film can be modified to be hydrophobic by reacting with HMDS to TMCS. Nanoporous silica films were deposited by spin coating and then template removal by oxygen plasma. The oxygen plasma decomposes the organic template to form the nanoporous films.

Cho et al., "Plasma Treatments of Molecularly Templated Nanoporous Silica Films" fails to teach maintaining the substrate and precursor layer under vacuum during the removing and exposing step and at all time in there between.

Dickinson et al. (6,846,380) teaches a cluster vacuum system for processing a semiconductor substrate for the purpose of enabling direct integration between the substrate processing modules operating under high purity atmospheric regime or a vacuum regime, wherein the transfer of the substrate between the modules does not require exposing the substrate to the ambient environment (col. 20, lines 43-55).

Therefore it would have been obvious at the time the invention was made to have modified Cho et al., "Plasma Treatments of Molecularly Templated Nanoporous Silica Films"

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process by using an apparatus as evidenced by Dickinson et al. (6,846,380) with the expectation of avoiding damage to the substrate due to the reaction with an atmospheric environment .

Claims 21-23,25,27,30-36,38 and 40 are rejected under 35 U.S.C. 103(a) as being unpatentable over Cho et al., "Plasma Treatments of Molecularly Templated Nanoporous Silica Films" in combination with Toma et al. (2003/0198895).

Features described above are incorporated here.

Cho et al., "Plasma Treatments of Molecularly Templated Nanoporous Silica Films" fails to teach the dehydroxylating agent being provided in a supercritical solvent.

Toma et al. (2003/0198895) teaches a supercritical passivating agent which is HMDS for silicon-oxide based low-k materials (abstract).

Therefore it would have been obvious for one skilled in the art at the time the invention was made to have modified Cho et al., "Plasma Treatments of Molecularly Templated Nanoporous Silica Films" by treating the precursor layer with a supercritical HMDS as evidenced by Toma et al. (2003/0198895) with the expectation of achieving similar success.

Claims 1-2,5-18,20 and 41 are rejected under 35 U.S.C. 103(a) as being unpatentable over Liu et al. (6,329,017) in combination with Lukas et al. (US 2004/0096672) further in combination with Dickinson et al. (6,846,380).

Liu et al. (6,329,017) teaches a mesoporous film from a solution containing a surfactant. After removal of the surfactant the silica film is partially hydroxylated to obtain the mesoporous film (abstract). Liu et al. (6,329,017) teaches forming the silica film by a spin on process (col. 7,

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lines 10-12). The removal of the surfactant is done by a heat treatment step (col. 9, lines 33-43).

The dehydrating step is performed with HMDS (col. 9, lines 43-65).

Lukas et al. (US 2004/0096672) teaches a non-thermal process for forming porous low dielectric constant films. Removal of a pore-forming material by UV source to form the porous dielectric film. Porous dielectric can include SiO and SiC. The coating is formed by spin coating or CVD [0027] in vacuum chamber [0031]. The pore former can be decomposable by UV, e-beam or other radiation or thermal means [0047].

Therefore it would have been obvious for one skilled in the art at the time the invention was made to have modified Liu et al. (6,329,017) process by incorporating a porogen as evidenced by Lukas et al. (US 2004/0096672) or to have modified Liu et al. (6,329,017) process by incorporating a dehydrating post treatment step as evidenced by Lukas et al. (US 2004/0096672) with the expectation of achieving similar success.

With respect to claim 20, the claim recites a multiple chamber apparatus for performing the porogen removal step and the dehydrating step. While the Examiner acknowledges the fact that the references are silent with respect to the number of chambers utilized, it is the Examiner's position that one skilled in the art at the time the invention was made would have had a reasonable expectation of achieving similar results regardless of the number of chambers utilizes, i.e. a single chamber or multi-chamber.

Liu et al. (6,329,017) in combination with Lukas et al. (US 2004/0096672) fail to teach maintaining the substrate and precursor layer under vacuum during the removing and exposing step and at all time in there between.

Features described above concerning Dickinson et al. (6,846,380) is incorporated here.

Therefore it would have been obvious at the time the invention was made to have modified Liu et al. (6,329,017) in combination with Lukas et al. (US 2004/0096672) process by using an apparatus as evidenced by Dickinson et al. (6,846,380) with the expectation of avoiding damage to the substrate due to the reaction with an atmospheric environment .

Claims 21-23,25-36 and 38-40 are rejected under 35 U.S.C. 103(a) as being unpatentable over Liu et al. (6,329,017) in combination with Lukas et al. (US 2004/0096672) further in combination with Toma et al. (2003/0198895).

Features described above are incorporated here

Liu et al. (6,329,017) in combination with Lukas et al. (US 2004/0096672) fail to teach the dehydroxylating agent being provided in a supercritical solvent.

Features described above concerning Toma et al. (2003/0198895) is incorporated here.

Therefore it would have been obvious for one skilled in the art at the time the invention was made to have modified Liu et al. (6,329,017) in combination with Lukas et al. (US 2004/0096672) by treating the precursor layer with a supercritical HMDS as evidenced by Toma et al. (2003/0198895) with the expectation of achieving similar success.

Claims 8 and 9 are rejected under 35 U.S.C. 103(a) as being unpatentable over Cho et al., "Plasma Treatments of Molecularly Templated Nanoporous Silica Films" in combination with Lukas et al. (US 2004/0096672), Gore et al. (6,391,932) or Gallagher et al. (US 2002/0123240) further in combination with Dickinson et al. (6,846,380).

Cho et al., "Plasma Treatments of Molecularly Templated Nanoporous Silica Films" fails to teach removing the porogen by UV, microwave or e-beam to form a porous film.

Lukas et al. (US 2004/0096672), Gore et al. (6,391,932) or Gallagher et al. (US 2002/0123240) all teach removing porogens to form dielectric materials with the use of UV, microwave or e-beam techniques.

Therefore, it would have been obvious for one skilled in the art at the time the invention was made to have modified Cho et al., "Plasma Treatments of Molecularly Templated Nanoporous Silica Films" by substituting one porogen removal process (oxygen plasma) with an equivalent porogen removing process (UV, microwave or e-beam) as evidenced by Lukas et al. (US 2004/0096672), Gore et al. (6,391,932) or Gallagher et al. (US 2002/0123240) with the expectation of achieving similar results.

Cho et al., "Plasma Treatments of Molecularly Templated Nanoporous Silica Films" in combination with Lukas et al. (US 2004/0096672), Gore et al. (6,391,932) or Gallagher et al. (US 2002/0123240) fail to teach maintaining the substrate and precursor layer under vacuum during the removing and exposing step and at all time in there between.

Features described above concerning the teachings of Dickinson et al. (6,846,380) are incorporated here.

Therefore it would have been obvious at the time the invention was made to have modified Cho et al., "Plasma Treatments of Molecularly Templated Nanoporous Silica Films" in combination with Lukas et al. (US 2004/0096672), Gore et al. (6,391,932) or Gallagher et al. (US 2002/0123240) process by using an apparatus as evidenced by Dickinson et al. (6,846,380)

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with the expectation of avoiding damage to the substrate due to the reaction with an atmospheric environment.

Claim 28 is rejected under 35 U.S.C. 103(a) as being unpatentable over Cho et al., "Plasma Treatments of Molecularly Templated Nanoporous Silica Films" in combination with Lukas et al. (US 2004/0096672), Gore et al. (6,391,932) or Gallagher et al. (US 2002/0123240) further in combination with Toma et al. (2003/0198895).

Features described above are incorporated here.

Cho et al., "Plasma Treatments of Molecularly Templated Nanoporous Silica Films" in combination with Lukas et al. (US 2004/0096672), Gore et al. (6,391,932) or Gallagher et al. (US 2002/0123240) fail to teach the dehydroxylating agent being provided in a supercritical solvent.

Features described above concerning Toma et al. (2003/0198895) is incorporated here.

Therefore it would have been obvious for one skilled in the art at the time the invention was made to have modified Cho et al., "Plasma Treatments of Molecularly Templated Nanoporous Silica Films" in combination with Lukas et al. (US 2004/0096672), Gore et al. (6,391,932) or Gallagher et al. (US 2002/0123240) by treating the precursor layer with a supercritical HMDS as evidenced by Toma et al. (2003/0198895) with the expectation of achieving similar success.

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Claim 4 is rejected under 35 U.S.C. 103(a) as being unpatentable over Liu et al. (6,329,017) in combination with Lukas et al. (US 2004/0096672) in combination with Watkins et al (US 2003/0157248) or Mukherjee et al. (6,444,715) further in combination with Dickinson et al. (6,846,380).

Features described above are incorporated here.

Liu et al. (6,329,017) in combination with Lukas et al. (US 2004/0096672) fail to teach forming the porous film by a supercritical infusion process.

Watkins et al (US 2003/0157248) or Mukherjee et al. (6,444,715) teach supercritical processes in forming porous low dielectric materials (abstract).

Therefore, it would have been obvious for one skilled in the art at the time the invention was made to have modified Liu et al. (6,329,017) in combination with Lukas et al. (US 2004/0096672) process by forming the silica layer by a supercritical process as evidenced by Watkins et al (US 2003/0157248) or Mukherjee et al. (6,444,715) with the expectation of achieving similar results.

Liu et al. (6,329,017) in combination with Lukas et al. (US 2004/0096672) in combination with Watkins et al (US 2003/0157248) or Mukherjee et al. (6,444,715) fail to teach maintaining the substrate and precursor layer under vacuum during the removing and exposing step and at all time in there between.

Features described above concerning the teachings of Dickinson et al. (6,846,380) are incorporated here.

Therefore it would have been obvious at the time the invention was made to have modified Liu et al. (6,329,017) in combination with Lukas et al. (US 2004/0096672) in

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combination with Watkins et al (US 2003/0157248) or Mukherjee et al. (6,444,715) process by using an apparatus as evidenced by Dickinson et al. (6,846,380) with the expectation of avoiding damage to the substrate due to the reaction with an atmospheric environment.

Claim 24 is rejected under 35 U.S.C. 103(a) as being unpatentable over Liu et al. (6,329,017) in combination with Lukas et al. (US 2004/0096672) in combination with Watkins et al (US 2003/0157248) or Mukherjee et al. (6,444,715) further in combination with Toma et al. (2003/0198895).

Features described above are incorporated here.

Liu et al. (6,329,017) in combination with Lukas et al. (US 2004/0096672) fail to teach forming the porous film by a supercritical infusion process.

Watkins et al (US 2003/0157248) or Mukherjee et al. (6,444,715) teach supercritical processes in forming porous low dielectric materials (abstract).

Therefore, it would have been obvious for one skilled in the art at the time the invention was made to have modified Liu et al. (6,329,017) in combination with Lukas et al. (US 2004/0096672) process by forming the silica layer by a supercritical process as evidenced by Watkins et al (US 2003/0157248) or Mukherjee et al. (6,444,715) with the expectation of achieving similar results.

Liu et al. (6,329,017) in combination with Lukas et al. (US 2004/0096672) in combination with Watkins et al (US 2003/0157248) or Mukherjee et al. (6,444,715) fail to teach the dehydroxylating agent being provided in a supercritical solvent.

Features described above concerning Toma et al. (2003/0198895) is incorporated here.

Therefore it would have been obvious for one skilled in the art at the time the invention was made to have modified Liu et al. (6,329,017) in combination with Lukas et al. (US 2004/0096672) in combination with Watkins et al (US 2003/0157248) or Mukherjee et al. (6,444,715) by treating the precursor layer with a supercritical HMDS as evidenced by Toma et al. (2003/0198895) with the expectation of achieving similar success.

Double Patenting

6. The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the "right to exclude" granted by a patent and to prevent possible harassment by multiple assignees. A nonstatutory obviousness-type double patenting rejection is appropriate where the conflicting claims are not identical, but at least one examined application claim is not patentably distinct from the reference claim(s) because the examined application claim is either anticipated by, or would have been obvious over, the reference claim(s). See, e.g., *In re Berg*, 140 F.3d 1428, 46 USPQ2d 1226 (Fed. Cir. 1998); *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970); and *In re Thorington*, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) or 1.321(d) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent either is shown to be commonly owned with this application, or claims an invention made as a result of activities undertaken within the scope of a joint research agreement.

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

Claims 1-18,20-36 and 38-41 are provisionally rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claims 1-41 of copending Application No. 10/785,235; over claims 1-39 of copending Application No. 10/672,311 and

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over claims 11-13,16,18 and 20-22 of copending Application 10/672,305. Although the conflicting claims are not identical, they are not patentably distinct from each other because all the application in question require method or process for forming a precursor layer having porogens, removing the porogen to form a dielectric matrix with voids or pores and treating with a dehydroxylating agent or silanol capping agent. While the application in question recites various methods for removing the porogen and treating with the capping agent, they all require very similar steps which would be obvious to one another.

This is a provisional obviousness-type double patenting rejection because the conflicting claims have not in fact been patented.

Response to Amendment

7. Applicant's arguments filed 7/3/06 have been fully considered but they are not persuasive.

Applicant argued that the prior art fails to teach the limitation of dehydroxylating the dielectric material after removal of the porogens without first exposing the dielectric matrix to moisture or ambient conditions and that the substrate and precursor film remain under vacuum.

The Examiner disagrees. Liu et al. (6,329,017) teaches dehydroxylating treatment being performed in a vacuum chamber under nitrogen or hydrogen atmosphere (col. 9, lines 45-65). Hence, Liu et al. (6,329,017) clearly teaches that the dielectric is not exposed to air or moisture prior to or during the dehydroxylating step.

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Cho et al., "Plasma Treatments of Molecularly Templated Nanoporous Silica Films" teaches dehydroxylating the dielectric film to tie up the oxygen sites (SiOH) to reduce the dielectric constant. The HMDS treatments are not performed in oxygen atmospheres (nitrogen) and one skilled in the art at the time the invention was made would have recognized that exposure to oxygen materials, i.e. water, air, etc., would be detrimental to achieve the desired reduction in dielectric constant.

Applicant argued that the prior art fails to teach a process whereby the substrate and the coating are performed in a vacuum without being exposed to atmospheric environment during the steps.

Applicant states that the Examiner suggests Cho and Liu for this teaching, however, Dickinson et al. (6,846,380) is clearly cited for teaching this feature.

Applicant argued that claims 21 and 41 respectively teach treating the dielectric material to remove pores while "concurrently" contacting with a dehydroxylating agent.

The Examiner agrees in part. However, it is well settled that the mere duplication of parts has no patentable significance unless a new and unexpected result is produced. *In re Harza*, 124 USPQ 378 (CCPA 1960). In this case, the duplication of performing the known process more than once to achieve the same desired effect.

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Applicant argued that claim 41 teaches multiple treating steps as opposed to a single treating step.

The Examiner agrees in part. However, it has been well settled that generally, no invention involved in the broad concept of performing simultaneously operations which have previously been performed in sequence is considered patentably distinct. *In re Tatincloux*, 108 USPQ 125.

8. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).


A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

9. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Brian K. Talbot whose telephone number is (571) 272-1428. The examiner can normally be reached on Monday-Friday 6AM-3PM.

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If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Timothy H. Meeks can be reached on (571) 272-1423. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

 9/5/06
Brian K Talbot
Primary Examiner
Art Unit 1762

BKT



Form 1449 (Modified) Information Disclosure Statement By Applicant (Use Several Sheets if Necessary)	Atty Docket No.	Application No.:
	NOVLP064/NVLS-794	10/404,693
	Applicant:	
	Humayun et al.	
	Filing Date	Group
	March 31, 2003	1762

U.S. Patent Documents

Examiner Initial	No.	Patent No.	Date	Patentee	Class	Sub-class	Filing Date
BT	A1	6,500,770 B1	12.2002	Cheng et al.			
BT	A2	2002/0192980 A1	12.2002	Hogle et al.			

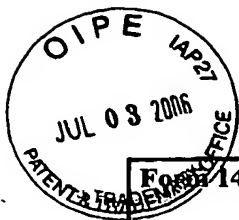
Foreign Patent or Published Foreign Patent Application

Examiner Initial	No.	Document No.	Publication Date	Country or Patent Office	Class	Sub-class	Translation	
							Yes	No

Other Documents

Examiner Initial	No.	Author, Title, Date, Place (e.g. Journal) of Publication
BT	C1	U.S. Office Action mailed July 13, 2005, from U.S Application No. 10/672,311 [Atty Dkt No. NOVLP075/NVLS-000820].
BT	C2	U.S. Office Action mailed July 27, 2005, from U.S Application No. 10/785,235 [Atty Dkt No. NOVLP085/NVLS-2875].
BT	C3	Cho et al., "Methods of Improving Porogen Removal and Film Mechanical Strength in Producing Ultra Low-K Carbon Doped Oxide Films Using Radical Photopolymerization", U.S. Application No. 10/982,654, filed November 5, 2004 (Atty Dkt: NOVLP115)
Examiner /Brian Talbot/		Date Considered 09/05/2006

Examiner: Initial citation considered. Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant.



Form 1449 (Modified) Information Disclosure Statement By Applicant (Use Several Sheets if Necessary)		Atty Docket No. NOVLP064/NVLS-794 Applicant: Humayun et al. Filing Date March 31, 2003	Application No.: 10/404,693 Group 1762
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U.S. Patent Documents

Examiner Initial	No.	Patent No.	Date	Patentee	Class	Sub-class	Filing Date
BT	A1	6,573,030 B1	06.03.03	Fairbairn et al.			
	A2	2004/0096586 A1	05.2004	Schulberg et al.			
	A3	2003/0198895 A1	10.2003	Toma et al.			
	A4	6,846,380 B2	01.2005	Dickinson et al.			
	A5	6,867,086 B1	03.2005	Chen et al.			
	A6	6,903,004	06.2005	Spencer et al.			
	A7	6,232,658 B1	05.2001	Catabay et al.			
	A8	6,171,661	01.2001	Zheng et al.			
	A9	2002/0016085	02.2002	Huang et al.			
	A10	6,455,417	09.2002	Bao et al.			
	A11	7,018,918	03.2006	Kloster et al.			
BT	A12	6,849,549	02.2005	Chiou et al.			

Other Documents

Examiner Initial	No.	Author, Title, Date, Place (e.g. Journal) of Publication
BT	C1	Subramonium et al., "Pulsed PECVD Method for Modulating Hydrogen Content in Hard Mask", U.S. Application No. 11/318,269, filed December 23, 2005 (Atty Dkt: NOVLP144/NVLS-3102)
	C2	U.S. Office Action mailed March 29, 2006, from U.S Application No. 10/800,377 [Atty Dkt No. NOVLP089/NVLS-002886].
	C3	U.S. Office Action mailed May 31, 2006, from U.S Application No. 10/941,502 [Atty Dkt No. NOVLP107/NVLS-2932].
	C4	U.S. Office Action mailed May 30, 2006, from U.S Application No. 10/785,235 [Atty Dkt No. NOVLP085/NVLS-2875].
	C5	U.S. Office Action mailed May 31, 2006, from U.S Application No. 10/849,568 [Atty Dkt No. NOVLP083/NVLS-2867].
	C6	U.S. Office Action mailed May 2, 2006, from U.S Application No. 11/050,621 [Atty Dkt No. NOVLP100/NVLS-2956].
	C7	U.S. Office Action mailed June 15, 2006, from U.S Application No. 10/800,409 [Atty Dkt No. NOVLP098/NVLS-2907].
	C8	Kelman et al., "Method for Reducing Stress in Porous Dielectric Films", U.S. Application No. 11/369,311, filed March 6, 2006 (Atty Dkt: NOVLP154/NVLS-3121)
	C9	U.S. Office Action mailed May 2, 2006, from U.S Application No. 10/295,965.
BT	C10	U.S. Office Action mailed August 9, 2005, from U.S Application No. 10/295,965.
Examiner /Brian Talbot/		Date Considered 09/05/2006

Examiner: Initial citation considered. Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant.